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AUTHOR McKee, Barbara G.: And Others
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ABSTRACT

Approximately 290 deaf college freshmen participated in a study of the relationship between perceived and actual abilities in eight communication modes (including reading, writing, speech reading with and without sound, and reception of manual and simultaneous communication). Ss rated their abilities before and after a communication course. Actual abilities were measured during the course. Correlational analysis indicated that accuracy of self ratings increased significantly from pre- to postcourse measures on each communication mode. Results suggested that communication training can improve the accuracy of student ratings of their own communication skills. (Author/CL)

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Perceived Versus Measured Communication Ability of Deaf College Students

Barbara G. McKee
Assistant Professor and Research Associate
Department of Educational Research and Development

Michael S. Stinson
Assistant Professor and Research Associate
Department of Educational Research and Development

Rowland S. Blake
Assistant Professor and Instructional Development Specialist
Technical and Professional Education Programs

National Technical Institute for the Deaf
Rochester Institute of Technology
Rochester, New York

Presented at the Annual Meeting of the
American Educational Research Association
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Abstract

This study examined the relationship between deaf students' perceived and actual abilities in several communication modes and measured whether the accuracy of perceived ability improves with communication training. Freshmen enrolled in a communication course at the National Technical Institute for the Deaf rated their communication abilities before the after the course. Actual abilities were measured during the course. Correlational analysis indicated that accuracy of self-ratings increased significantly from pre- to post-course measures on each communication mode. These results suggest that communication training can improve the accuracy of student ratings of their own communication skills.

Perceived Versus Measured Communication Abilities of Deaf College Students

This study examined deaf college students' self ratings of their abilities in several communication modes and compared their self-ratings to their actual abilities as measured by objectively scored communication tests. It examined how accurate the self-ratings were and whether accuracy improved with communication training.

There are at least two reasons why self-estimations of ability are important in an educational setting: (a) Student perceptions of their abilities influence their motivation for acquiring future skills, and (b) such estimates may predict future performance as accurately as more cumbersome tests of ability and consequently, they may be used to place students into various educational programs. This paper deals with both of these issues in the context of communication skill self-ratings by deaf college students.

Motivational Significance of Self-Evaluations

There is much evidence that a person's beliefs about his/her abilities are important determinants of that person's goals and performance. Brim (1965) and Uguroglu and Walberg (1979) concluded on the basis of comprehensive reviews of the educational literature that a person's belief about his/her ability strongly affects academic performance. A positive belief in one's ability enhances one's motivation for making further attempts at a task, while a negative belief detracts from motivation.

Motivation is also affected by the accuracy of a person's estimations of his/her abilities. If a student overestimates his/her abilities, he/she

may attempt to study something that is too difficult and become frustrated and fail. If a student underestimates his/her abilities, he/she may avoid opportunities in which he/she can be successful (Jones, 1977).

For deaf students, accurate perceptions of their own communication abilities are particularly important. These perceptions may influence their motivation to participate in communication training and also their motivation to communicate with others, especially normal hearing persons. It is very easy for deaf persons perceptions of their communication abilities to be distorted. Parents and teachers of the deaf may themselves not accurately assess their communication abilities, and thus may not give accurate feedback. In addition, some parents and teachers may be biased to encourage (or discourage) communication by giving overly positive (or overly negative) feedback to deaf children. The fact that acquiring speech and language is a prolonged, frustrating experience for many deaf people also tends to distort the accuracy of their perceptions of their own communicaiton abilities (Furth, 1970). For self-perceptions of ability to be appropriately motivating, it is important that they be relatively accurate.

This study addressed two questions about the accuracy of student perceptions:

1. How accurately do students rate their communication skills?

2. Does communication training increase the students' accuracy in rating their communication skills?

The study was conducted in the context of an introductory communication course for deaf college students during their first quarter at the National Technical Institute for the Deaf.

Students might be expected to change their own perceptions of their communication skills during the course for at least three reasons: (a) Their thinking about communication became more conscious through gaining a general knowledge about communication, including a metric for describing communication skill levels, (b) they were given a battery of communication tests (without being given the results), and (c) they were placed in a situation where they could compare their own abilities to those of their peers. Research with normal hearing students suggests that each of these factors could change self-estimates of ability (Jones, 1977). This is also consistent with other research that demonstrates that training can improve one's ability to rate some object (such as instructional films) on a set of criteria. To our knowledge, however, no studies have been conducted to demonstrate an increase of self-rating accuracy with deaf students.

Some researchers have investigated the relationship of self report instruments and audiological measures in the assessment of hearing loss (Silverman, et. al., 1948; Pearson, Keel, & Taylor, 1973). But no reports seem to have examined the relationship between perceived and actual ability of hearing impaired students in any communication mode other than hearing.

Use of Self-Ratings to Predict Actual Abilities

A final question of this study represents an extension of the question about the accuracy of self ratings: Are self ratings accurate enough to be used to place students in different levels of language ability? If so, it might mean that self ratings could replace objectively based communication measures as a basis for grouping students in communication courses or other courses or tasks differentiated by language requirements.

Biggs and Johnson (1972) found that for a group of junior college students self-made predictions added little to the prediction of their future performance beyond that of their past performance or measures of their aptitudes. However, there do not seem to have been any studies dealing with the use of self-estimates by deaf students to predict their communication skill levels.

Methodology

Procedures and Data Sources

Approximately 290 freshman at the National Technical Institute for the Deaf (NTID) participated in this study during the summer of 1978. The students were all in their first quarter and enrolled in a five-week course entitled "Introduction to Communication."

On the first day of the course, students were administered a questionnaire asking them to rate their abilities in several communication modes, along with other opinion items. At the end of the course, they were given the questionnaire a second time. (See the appendix for a copy of the instrument.) The self-rating items were in the form of statements followed by five choices, for example, "When I read, I understand: (a) everything, (b) almost everything, (c) about half, (d) a few words, (e) nothing."

The eight communication modes on which students were asked to rate themselves were:

1. reading
2. writing
3. audition without speechreading
4. speechreading with sound
5. speechreading without sound
6. speech intelligibility
7. reception of manual communication
8. reception of simultaneous communication

During the same period of time, a battery of communication tests was administered to the students. This resulted in a final rating for each communication mode on a scale of one to five, with the same descriptors as those used in the student questionnaire. The objectively scored communication tests were ones developed and used at NTID over a period of years (Walter, et. al., 1979).

During the same period of time a battery of communication tests was administered to the students to assess their skill in each communication mode.

Instrumentation

The instrument used to assess students' perceptions of their own abilities was written by the principal investigators. It was written with skill level descriptors consistent with those used in the actual communication skills tests.

A measure of the students' skills in each of the eight communication modes was also obtained from a battery of tests given to all incoming NTID students. The tests were developed and refined over several years of use at NTID. Here are the tests for the eight communication modes:

1. Reading comprehension: Students took a standardized reading test--the California Reading Test (Junior High level). Items included comprehension questions about written text, questions about reading skills and strategies, and qeustions which required following written directions.

2. Writing intelligibility: Students viewed a short cartoon episode on a silent videotape and wrote a composition about the episode. Scores were assigned to each sentence according to the severity of any grammatical anomalies that were present.

3. Audition: Students were required to listen to and recognize selected words and also sentences from the Everyday Sentence List of the Central Institute for the Deaf.

4. Speechreading with sound: Students viewed a videotape of a person saying sentences (with sound) from the Central Institute for the Deaf Everyday Sentence List, and then wrote out the sentences.

5. Speechreading without sound: Students viewed a silent videotape of a person saying sentences from the Everyday Sentence List of the Central Institute for the Deaf and were required to write out the sentences. Scores were obtained by counting the number of key words written correctly.

6. Speech intelligibility: Students were recorded on tape while reading a standard written passage. Trained listeners evaluated the recording and rated the students' speech intelligibility. This was the only test utilizing raters to obtain a score. Studies indicated a high inter-rater reliability.

7. Manual communication reception: Students viewed a videotape of a person signing sentences (without speech) from the Central Institute for the Deaf Everyday Sentence List and were required to write out the sentences. Scores were obtained by counting the number of key words written.

8. Simultaneous communication reception: Students viewed a videotape of a person signing and saying sentences from the Central Institute for the Deaf Everyday Sentence List and were required to write out the sentences. Scores were obtained by counting the number of key words written for the sentences.

A raw numerical score was obtained for each of the tests. From each of these raw scores a score from 1 to 5 was derived through mathematical

transformation. This was in order to normalize the scores onto a single numerically uniform scale with few enough levels (five) to allow for more intuitive interpretations and for placement in communication classes.

More detailed descriptions of the tests, the scoring, and examples of the test items can be found in Walter, et. al., 1979.

Analyses

To answer the questions about how accurately the students rate their communication skills and how training affects their accuracy of rating, the following analyses were performed:

1. Analysis of variance. Students were divided into three groups for each communication mode, according to whether their measured ability in that mode was high, medium, or low. The attempt was made to divide the distribution of students at naturally occuring breaking points and to group roughly one-third of the students in each level. An analysis of variance was conducted for each communication mode, with the independent variables being the level of actual skill and the time the rating was made (pre-course vs. post-course), and the dependent measure being the pre and post-course ratings. This allowed for seeing the effect of actual skill and the effect of instruction on the self-ratings.

2. Correlation analysis. Pearson's product-moment correlation coefficients were calculated for the entire group of students, correlating pre- and post-course self-ratings for each of the eight communication modes. This allowed for seeing the effect of instruction on self-ratings.

To answer the prediction question about how accurately self-ratings can predict membership in different levels of skills, the following analysis was performed:

3. Discriminate analysis: A discriminate analysis was conducted to derive a prediction formula for placement at a level for each of the eight communication modes. The predictor scores available for inclusion were the pre- and post-course self-ratings.

Results

Accuracy of Self-Ratings

Means of student self-ratings of communication ability were evaluated for each of the eight communication modes and are reported in Table 1. These means are broken down by (a) ability-level grouping (high, medium, and low) according to the objectively scored tests and by (b) the time of the self-rating (beginning vs. end of the course).

Insert Table 1 about here

Each of the eight self-ratings was subjected to an analysis of variance in which ability-level grouping and time of rating were factors. These analyses are shown in Table 2. The effect of ability grouping was significant for each of the communication modes. Students showing better communication skills according to the objectively scored tests, rated themselves higher than did students with poorer communication skills.

The effect of time of rating (beginning vs. end of course) was not statistically significant for any communication mode. Student did not, as an entire group, increased or decrease their self-ratings from the beginning to the end of the course.

Insert Table 2 about here

The most interesting results of these analyses is that interaction between ability grouping and time of self-rating was statistically significant for each of the eight communication modes. Inspection of the mean scores in Table 1 indicates that for seven of the modes, the interaction effect is due the mean scores for the subjects in the high ability group shifting upward from the beginning to the end of the course, and the means for the low-ability group shifting downwards. In other words, self-ratings changed in a direction resulting in a closer correspondence to the skill level indicated by the communication tests.

The single exception to this pattern of increasingly accurate self-ratings was for writing. For writing the mean scores for subjects in the high ability group shifted downward and those for the low-ability group shifted upwards. One factor that may contribute to the different pattern of results here is that the initial ratings for writing were higher than for the other seven communication modes.

In order to explore further the relationship between self-ratings and communication test scores, correlations between these measures were computed for the beginning and the end of the course. These correlations are presented in Table 3. For each of the eight communication modes the correlation between the self-rating and the test score increased markedly from the beginning to the end of the course. It is clear that by the end of the course, "Introduction to Communication," the self-ratings of communication ability more accurately reflected performance on the objectively scored tests of communi-

cation skill. These correlational results are consistent with those for the analyses of variance. Both sets of results suggest that the change (up and down) in self-rating depended upon a student's relative level of communication skill, with the majority of changes being in a direction that led to a closer match with the individual's test score.

Insert Table 3 about here

Prediction of Actual Ability Level

Discriminant analyses were performed to see how accurately students' own self ratings could predict their communication ability--high, medium, or low.

At least one significant discriminant function was found for each of the eight communication modes. However, only a small amount of variance in the discriminant functions could be attributed to group membership (square of the canonical correlation). In addition, although the use of the students' self rating scores significantly increased the placement of students into groups over that attributable to chance (in most cases random placement into three equal groups would yield 33% correct placement), the percentage of correct placement did not reach acceptably high levels.

The discriminate analysis that yielded the "best" predictive results was the one using students' measured speech intelligibility as the grouping variable. Tables 4 and 5 summarize the complete results of that discriminant analysis. Table 6 briefly summarizes the results of the remaining seven

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Insert Tables 4, 5 and 6 about here

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analyses. As might be expected, post-course perceptions were consistently better (more accurate) predictors than pre-course perceptions. This is consistent with findings of the analyses of variance and correlational analysis.

Discussion

Helping students accurately assess their own abilities, interests and values is one major goal of career education in order to facilitate realistic and informed decisions about career goals, e.g., a major, occupation, job, or professional development. To the extent that a person makes decisions based on inaccurate or incomplete information, the person is more apt to experience frustration and lack of success. A mismatch of abilities and aspirations will also encourage more frequent changes of majors and attrition in educational institutions, which can be very costly. If people overestimate their abilities, they may aspire to jobs which result in frustration and failure. If people underestimate their abilities, they may avoid professional opportunities in which they may be successful. For deaf persons, accurate perceptions of their communication abilities is particularly important in making career decisions.

This study suggests that by deliberately teaching students about different modes of communication and helping them to assess their own communication abilities, it is possible to increase the accuracy of their perceptions and thus enhance the success of their communication training, their career decisions and their communication with others. It is not clear, however, how much of this changes was due to course content and how much was due to the experience of taking the various tests and interaction with peers during the pre-college summer program.

Results indicated, however that students' self ratings of their abilities are probably not accurate enough to replace the use of objective communication skills tests.

M.Stinso-9
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Table 1

Mean Self-Ratings of Ability for Eight Communication Modes as a Function of Communication Ability Level and Time of Self-Rating

Communication Mode	Actual Ability Level[a]	n	Self-Rating of Ability[b]	
			Pre-course	Post-course
Reading Comprehension	High	86	3.918	4.233
	Medium	92	3.772	3.587
	Low	73	3.723	3.644
Writing Intelligibility	High	91	4.253	3.824
	Medium	69	4.217	4.130
	Low	86	4.244	4.360
Audition without Speechreading	High	39	2.897	3.564
	Medium	92	2.511	2.750
	Low	104	2.452	2.010
Speechreading with Sound	High	26	4.00	4.434
	Medium	79	3.772	3.822
	Low	80	3.500	3.050
Speechreading without Sound	High	82	3.305	3.341
	Medium	81	3.148	3.309
	Low	80	3.302	2.650
Speech Intelligibility	High	73	4.027	4.410
	Medium	93	3.645	3.581
	Low	89	3.471	2.775
Manual Reception	High	80	3.588	4.225
	Medium	85	3.600	3.812
	Low	85	2.988	2.553
Simultaneous Reception	High	86	4.19	4.35
	Medium	77	4.10	4.42
	Low	85	4.11	3.95

[a] As measured by objectively scored communication test.

[b] Range of rating scale was 1 (lowest) to 5 (highest).

Table 2

Analysis of Variance of Self-Ratings of Ability

for Each of Eight Communication Modes

Communication Mode of the Self-Rating	Effect					
	Ability Level Group (A)		Time of Rating (Pre- vs. Post-)(P)		A x P Interaction	
	df	F	df	F	df	F
Reading Comprehension	2,248	14.15***	1,248	< 1	2,248	7.33***
Writing Intelligibility	2,243	4.95**	1,243	3.83	2,243	5.98**
Audition without Speechreading	2,232	21.38***	1,232	1.80	2,232	8.28***
Speechreading with Sound	2,232	30.88***	1,232	< 1	2,232	9.78***
Speechreading without Sound	2,240	10.13***	1,240	< 1	2,240	3.57*
Speech Intelligibility	2,252	51.98***	1,252	2.52	2,252	15.15***
Manual Reception	2,247	44.39***	1,247	2.34	2,247	11.90***
Simultaneous Reception	2,245	3.48*	1,245	2.13	2,245	3.35*

* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 3

Pearson Product-Moment Correlation Coefficients

of Perceived vs. Measured Abilities

(Total Group)

Communication Mode	Pre-Course Correlation		Post-Course Correlation	
	r	P	r	P
Reading Comprehension	.13	.02	.46	.001
Writing Intelligibility	.00	--	.32	.001
Audition without Speechreading	.08	--	.43	.001
Speechreading with Sound	.18	.004	.56	.001
Speechreading without Sound	.09	--	.33	.001
Speech Intelligibility	.21	.001	.66	.001
Manual Reception	.21	.001	.67	.001
Simultaneous Reception	.00	--	.27	.001

Table 4

Summary of Three-Group Stepwise Discriminant Analysis for Speech Intelligibility

Step	Variable	F to Enter[c]	Wilk's Lambda[a]	Approximate Multivariate F for Test of Lambda	Change in Rao's V[b]	Significance of Change in V	Standardized Discriminant Function Coefficients	
							Function I	Function II
1	Speech - Post	52.3	.66**	52.3	104.7	.001	.542	-.007
2	Manual Comm Post	12.8	.59**	31.1	37.6	.001	-.362	-.339
3	Writing Post	9.0	.54**	24.4	19.8	.001	.206	-.829
4	Audition Post	3.9	.52**	19.5	12.3	.002	.236	-.391
5	Speechreading Post	3.1	.51**	16.4	8.4	.015	-.158	.423
6	Speech - Pre	3.7	.49**	14.4	11.9	.003	.110	-.602
7	Speechreading Pre	2.2	.48**	12.7	5.6	.062	.083	.438
8	Speechreading Pre	1.3 1.3	.47**	11.3	4.1	.127	.130	.274
	Eigenvalue						.8381	.1494
	Relative Percentage						84.87	15.13
	Canonical Correlation						.6752	.3606

[a] Degrees of freedom range from 1,207 on step 1 to 8,200 on step 8.

[b] Indicates increase in discrimination attributable to that variable.

[c] Minimum F to enter = 10.

[d] All variables are students' perceived ability (pre or post) for that communication skill.

**$p \leq .001$

Table 5

Predicted Classification of Three Groups with Perceived Ability

Scores and Centroids of Three Groups on Two Discriminant Functions

Actual Ability Group	n	Predicted Group			Priar Probability	% Correct Classification	Centroid of Group	
		Low	Medium	High			Function I	Function II
Low	74	56	11	7	.33	75.7	-.75348	-.27553
Medium	80	20	40	20	.33	50	.01428	.45847
High	56	3	10	43	.33	76.8	.97528	-.29087

Percentage of Cases Correctly Classified = 66.19%

Table 6

Summary of Stepwise Discriminant Function Analysis for

Seven Communication Modes

Dependent Variable	Steps	Variable Entered[a]	F to Enter	Percentage of Cases Correctly Classified	No. of Significant Functions Obtained	Eigenvalues of Functions	Canonical Correlation of Function	Canonical Correlation Squared
Reading	1	R-Post	19.2	57.9%	1	1 = .4340	.5502	.3027
	2	SI-Post	10.1					
	3	A-Post	6.1					
Writing	1	R-Post	12.5	60.1%	1	1 = .4137	.2926	.2926
	2	SRS-Post	6.1					
	3	MR-Post	3.3					
	4	SCR-Post	4.3					
	5	A-Post	3.4					
Audition without Speechreading	1	SI-Post	32.2	61.9%	1	1 = .5978	1 = .6117	.3742
	2	A-Post	7.9					
	3	MR-Post	3.9					
	4	SR-Post	3.8					
Speechreading with Sound	1	SRS-Post	36.6	56.0%	1	1 = .7336	.6505	.4232
	2	SI-Post	11.12					
	3	MR-Post	5.7					
	4	R-Post	3.2					
Speechreading without Sound	1	SI-Post	22.05	62.8%	1	1 = .3818	.5257	.2763
	2	SRS-Post	4.7					
Manual	1	MR-Post	53.6	60.3%	1	1 = .5849	.6075	.3691
	2	SI-Post	4.0					
Simultaneous	1	SI-Post	16.3	56.0%	2	1 = .2736	1 = .4635	.2148
	2	SR-PRE	4.5			2 = .1195	2 = .3267	.1069
	3	SCR-Post	4.7					
	4	R-Post	3.2					

[a]Abbreviations of Predictor Variables:

R = reading
W = writing
A = audition without speechreading
SRS = speechreading with sound
SR = speechreading without sound
SI = speech intelligibility
MR = manual reception
SCR = simultaneous reception

INTRODUCTION TO COMMUNICATION

Pre-Course Questionnaire

This questionnaire will help us improve this course. Please be honest. You will not be graded on this questionnaire.

PART A.

Read the following statements. Show how much you agree or do not agree with each statement. Circle one letter for each statement.
These are your five choices:

A. I strongly agree
B. I agree
C. I have no opinion
D. I do not agree
E. I strongly do not agree

Example: I like to read.

Choice:	How you feel:	How you mark your answer:
A.	You strongly agree	(A) B C D E
B.	You agree	A (B) C D E
C.	You have no opinion	A B (C) D E
D.	You do not agree	A B C (D) E
E.	You strongly do not agree	A B C D (E)

PLEASE CIRCLE THE ANSWER THAT IS CLOSEST TO HOW YOU FEEL

		Strongly Agree	Agree	No Opinion	Do not Agree	Strongly Do Not Agree
1.	It is important for me to speak well.	A	B	C	D	E
2.	Reading (receiving) sign language well will be important in my future job.	A	B	C	D	E
3.	I want training to improve my writing skills.	A	B	C	D	E
4.	Good lipreading skills are necessary at NTID.	A	B	C	D	E
5.	I want training to improve my speech skills.	A	B	C	D	E
6.	It is important for me to write well.	A	B	C	D	E
7.	Good reading skills will be important in my future job.	A	B	C	D	E
8.	Good speech skills are necessary at NTID.	A	B	C	D	E
9.	Good lipreading skills will be important in my future job.	A	B	C	D	E
10.	It is important for me to read well.	A	B	C	D	E
11.	I want training to improve my listening skills.	A	B	C	D	E
12.	Good reading skills are necessary at NTID.	A	B	C	D	E
13.	It is important for me to lipread well.	A	B	C	D	E
14.	Good writing skills are necessary at NTID.	A	B	C	D	E
15.	I want training to improve my reading skills.	A	B	C	D	E
16.	It is important for me to read (receive) manual communication well.	A	B	C	D	E

		Strongly Agree	Agree	No Opinion	Do Not Agree	Strongly Do Not Agree
17.	It is important for me to communicate with my hands well.	A	B	C	D	E
18.	Reading manual language well is necessary at NTID.	A	B	C	D	E
19.	Communicating with my hands will be important in my future job.	A	B	C	D	E
20.	I want training to read (receive) manual language better.	A	B	C	D	E
21.	Good listening skills will be important in my future job.	A	B	C	D	E
22.	Communicating with my hands well is necessary at NTID.	A	B	C	D	E
23.	It is important for me to have good listening (hearing) skills.	A	B	C	D	E
24.	Good listening skills are necessary at NTID.	A	B	C	D	E
25.	Good speech skills will be important in my future job.	A	B	C	D	E
26.	I want training to communicate with my hands better.	A	B	C	D	E
27.	Good writing skills will be important in my future job.	A	B	C	D	E
28.	I want training to improve my lipreading skills.	A	B	C	D	E

PART B.

Read the following statements. Answer each question. Circle one letter for each statement.
These are your five choices:

A. Everything
B. Most of the message
C. About half the message
D. A few words
E. Nothing

		Everything	Most	About Half	A Few Words	Nothing
1.	When I read, I understand:	A	B	C	D	E
2.	When I listen to a hearing person talk and I do not lipread, I understand:	A	B	C	D	E
3.	When I lipread a hearing person and I do not hear or do not listen, I understand:	A	B	C	D	E
4.	When I speak with my voice, hearing persons understand:	A	B	C	D	E
5.	When I write, people understand:	A	B	C	D	E
6.	When people use manual language (sign) but do not speak, I understand:	A	B	C	D	E
7.	When I sign with my hands but do not speak, someone who signs understands:	A	B	C	D	E
8.	When I communicate with my hands and voice, a hearing person who signs understands:	A	B	C	D	E
9.	When I watch people sign with their hands, and I also lipread, I understand:	A	B	C	D	E
10.	When I lipread a hearing person and I also listen, I understand:	A	B	C	D	E